

Customer Number: 000959

Attorney's  
Docket  
Number GEN-007ACP



COPY OF PAPERS  
ORIGINALLY FILED

Declaration, Petition and Power of Attorney for Patent Application

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

**DEVICE FOR IDENTIFYING THE PRESENCE OF A  
NUCLEOTIDE SEQUENCE IN A DNA SAMPLE**

the specification of which

(check one)

is attached hereto.

was filed on \_\_\_\_\_ as

Application Serial No. \_\_\_\_\_

and was amended on \_\_\_\_\_

(if applicable)

I do not know and do not believe that the subject matter of this application was known or used by others in the United States or patented or described in a printed publication in any country before my invention thereof, or patented or described in a printed publication in any country or in public use or on sale in the United States more than one year prior to the date of this application, or first patented or caused to be patented or made the subject of an inventor's certificate by me or my legal representatives or assigns in a country foreign to the United States prior to the date of this application on an application filed more than twelve months (six months if this application is for a design) before the filing of this application; and I acknowledge my duty to disclose information of which I am aware which is material to the examination of this application, that no application for patent or inventor's certificate on the subject matter of this application has been filed by me or my representatives or assigns in any country foreign to the United States, except those identified below, and that I have reviewed and understand the contents of the specification, including the claims as amended by any amendment referred to herein.

I acknowledge the duty to disclose to the Office all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, §1.56.

## CLAIM OF BENEFIT OF EARLIER FOREIGN APPLICATION(S)

I hereby claim priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below, and have also identified below any foreign application(s) for patent or inventor's certificate filed by me on the same subject matter having a filing date before that of the application(s) from which priority is claimed.

Check one:

- no such applications have been filed.  
 such applications have been filed as follows

### EARLIEST FOREIGN APPLICATION(S), IF ANY, FILED WITHIN 12 MONTHS (6 MONTHS FOR DESIGN) PRIOR TO THIS U.S. APPLICATION

| Country | Application Number | Date of Filing<br>(month,day,year) | Priority Claimed<br>Under 35 USC 119                     |
|---------|--------------------|------------------------------------|--|
|         |                    |                                    | <input type="checkbox"/> Yes <input type="checkbox"/> No |
|         |                    |                                    | <input type="checkbox"/> Yes <input type="checkbox"/> No |
|         |                    |                                    | <input type="checkbox"/> Yes <input type="checkbox"/> No |
|         |                    |                                    | <input type="checkbox"/> Yes <input type="checkbox"/> No |
|         |                    |                                    | <input type="checkbox"/> Yes <input type="checkbox"/> No |

### ALL FOREIGN APPLICATION(S), IF ANY FILED MORE THAN 12 MONTHS (6 MONTHS FOR DESIGN) PRIOR TO THIS U.S. APPLICATION

|  |
|--|
|  |
|  |
|  |

**CLAIM FOR BENEFIT OF U.S. PROVISIONAL APPLICATION(S)**

I hereby claim the benefit under 35 U.S.C. §119(e) of any United States provisional application(s) listed below.

|   |  |
|---|--|
| <u>60/228,239</u><br>(Application Serial No.) | <u>August 25, 2000</u><br>(Filing Date)  |
| <u>60/266,035</u><br>(Application Serial No.) | <u>February 2, 2001</u><br>(Filing Date) |

CLAIM FOR BENEFIT OF EARLIER U.S./PCT APPLICATION(S)

I hereby claim the benefit under Title 35, United States Code, §120 of any earlier United States application(s) or PCT international application(s) designating the United States listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the earlier application(s) in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose to the Office all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, §1.56 which became available between the filing date(s) of the earlier application(s) and the national or PCT international filing date of this application. As to subject matter of this application which is common to my earlier application(s), if any, described below, I do not know and do not believe that the same was known or used by others in the United States or patented or described in a printed publication in any country before my invention thereof, or patented or described in a printed publication in any country or in public use or on sale in the United States more than one year prior to the date(s) of said earlier application(s), or first patented or caused to be patented or made the subject of an inventor's certificate by me or my legal representatives or assigns in a country foreign to the United States prior to the date(s) of said earlier application(s) on an application filed more than twelve months (six months if this application is for a design) before the filing of said earlier application(s); and I acknowledge that no application for patent or inventor's certificate on said subject matter has been filed by me or my representatives or assigns in any country foreign to the United States except those identified herein.

---

(Application Serial No.)

---

(Filing Date)

---

(Status)  
(patented,pending,aband.)

---

(Application Serial No.)

---

(Filing Date)

---

(Status)  
(patented,pending,aband.)

**POWER OF ATTORNEY:** As a named inventor, I hereby appoint the following attorneys and/or agents to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

|                        |                 |                     |  |
|------------------------|-----------------|---------------------|--|
| James E. Cockfield     | Reg. No. 19,162 | Megan E. Williams   | Reg. No. 43,270                                  |
| Thomas V. Smurzynski   | Reg. No. 24,798 | Jeremiah Lynch      | Reg. No. 17,425                                  |
| Ralph A. Loren         | Reg. No. 29,325 | David J. Rikkers    | Reg. No. 43,882                                  |
| Giulio A. DeConti, Jr. | Reg. No. 31,503 | Maria C. Laccotripe | Limited Recognition<br>Under 37 C.F.R. § 10.9(b) |
| Ann Lampert Hammitt    | Reg. No. 34,858 | Debra J. Milasincic | Reg. No. 46,931                                  |
| Elizabeth A. Hanley    | Reg. No. 33,505 | David R. Burns      | Reg. No. 46,590                                  |
| Amy E. Mandragouras    | Reg. No. 36,207 | Sean D. Detweiler   | Reg. No. 42,482                                  |
| Anthony A. Laurentano  | Reg. No. 38,220 | Peter S. Stecher    | Reg. No. 47,259                                  |
| Kevin J. Canning       | Reg. No. 35,470 | Cynthia L. Kanik    | Reg. No. 37,320                                  |
| Jane E. Remillard      | Reg. No. 38,872 | Theodore R. West    | Reg. No. 47,202                                  |
| Peter C. Lauro         | Reg. No. 32,360 | Shayne Y. Huff      | Reg. No. 44,784                                  |
| DeAnn F. Smith         | Reg. No. 36,683 |                     |  |
| Jeanne M. DiGiorgio    | Reg. No. 41,710 |                     |  |

all of: LAHIVE & COCKFIELD, LLP, 28 State Street, Boston, MA 02109, and to:

Nina Pearlmutter                  Reg. No. 35,639                  Robert L. Spadasfora, Jr.                  Reg. No. 46,197

of GENOME THERAPEUTICS CORPORATION, 100 Beaver Street, Waltham, MA 02453-8443.

Send Correspondence to Peter C. Lauro, Esq. at Customer Number: 000959 whose address is:

Lahive & Cockfield, LLP, 28 State Street, Boston, MA 02109

Direct Telephone Calls to: (name and telephone number)

Peter C. Lauro, Esq., (617) 227-7400

Wherefore I petition that letters patent be granted to me for the invention or discovery described and claimed in the attached specification and claims, and hereby subscribe my name to said specification and claims and to the foregoing declaration, power of attorney, and this petition.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

|  |             |
|--|-------------|
| <b>Full name of sole or first inventor</b> |             |
| James Benn                                 |             |
| <b>Inventor's signature</b>                | <b>Date</b> |
| <br>                                       |             |
| <b>Residence</b>                           |             |
| 29 Academy Street, Arlington, MA 02476     |             |
| <b>Citizenship</b>                         |             |
| United States of America                   |             |
| <b>Post Office Address (if different)</b>  |             |

|   |             |
|---|-------------|
| <b>Full name of second inventor, if any</b> |             |
| Jean-Francois Manchec                       |             |
| <b>Inventor's signature</b>                 | <b>Date</b> |
| <br>  |             |
| <b>Residence</b>                            |             |
| 36 Pilgrim Road, Natick, MA 01760           |             |
| <b>Citizenship</b>                          |             |
| France                                      |             |
| <b>Post Office Address (if different)</b>   |             |

**DEVICE FOR IDENTIFYING THE PRESENCE OF A NUCLEOTIDE  
SEQUENCE IN A DNA SAMPLE****Reference to Related Applications**

5

This application claims priority to U.S. Provisional Patent Application No. 60/228,239 filed August 25, 2000 and U.S. Provisional Patent Application No. 60/266,035, filed February 2, 2001, the contents of which are hereby incorporated by reference. The subject matter of this application relates to U.S. Provisional Application Nos. 60/131,660, filed April 29, 1999, 60/155,299, filed September 21, 1999, , U.S. Patent Application No. 09/422,677, filed October 21, 1999, U.S. Continuation-in-Part Application No. 09/561,764, filed April 28, 2000 and U.S. Patent Application, Attny. Docket No. GEN-007CP, filed August 24, 2001. The aforementioned applications, and the references cited therein, are incorporated herein by reference.

15

**Field of the Invention**

The present invention relates to devices and methods for detecting the presence, absence or mutation of a particular nucleotide at a specific location on a strand of DNA.

20

A single nucleotide position on a strand of DNA may be responsible for a polymorphism or an allelic variation. There are known disease states that are caused by such variations at a single nucleotide position. The usefulness of detecting such variations includes but is not limited to, genotyping, DNA family planning, diagnostics (including infectious disease), prenatal testing, paternal determination, pharmacogenetics, and forensic analysis.

Laboratory automation has played a key role in the advancement of genomics and drug discovery over the past decade. Automated systems are now used in high-throughput sample preparation for DNA sequencing at large sequencing centers.

25

Modern laboratories employ partially automated procedures for handling samples. In these procedures, reagents and templates are combined by manually feeding 96-channel pipettors with thermocycling plates.

30

The techniques of dialysis and ultrafiltration, although well established, are typically difficult to perform on small sample volumes without suffering loss of the sample. A significant drawback in standard 5-10 µl sequencing reactions is that at least 50% of the sample is wasted. Furthermore, the amount of fluorescently labeled DNA that can be detected on current fluorescent readers is much lower than the amounts that